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The Significance of Pyrexia in Surgical Cases.

WITH SPECIAL REFERENCE TO THE TEMPERATURE CURVE BEFORE AND AFTER LAPAROTOMY.

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THE SIGNIFICANCE OF PYREXIA IN SURGICAL CASES.[1]

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The clinical thermometer maintains its unique position among the useful inventions given the medical profession, as an aid to accurate diagnosis and treatment. It can scarcely be said that any instrument of precision in our possession equals it in value. But its value to the physician is far greater than to the surgeon, and it is the purpose of this paper to show some of the reasons why this is true. It is well known to all, and for obvious reasons, that prior to the discovery of the circulation of the blood, very indifferent importance was attached to the pulse as indicative of the temperature of the body, or showing the degree of illness suffered by the patient.

The temperature of the surface of the body was valued by Hippocrates and his followers, while they ignored the pulse altogether. We find that but little progress was made in thermometry until the latter half of the 18th century. Boerhaave and his pupil, Van Sweiten, thought the thermometer only measured surface heat. The latter was among the first, however, to declare that a rapid pulse was pathognomonic of fever.

DeHaen, of Vienna, studied the temperature in health and disease, 1747–1759. In 1839, Gavarret confirmed the investigations of De Haen of nearly a century previous. In England, Brodie and Davy, in 1850, established thermometry upon a firm and scientific basis. Sidney Ringer, in 1866, also helped by his observations to thoroughly establish the use of the clinical thermometer. In France, Claude Bernard should be mentioned for his valuable contributions to this important litera-

1. Read before the District of Columbia Medical Society, November, 1892.

ture. We may, in concluding this historical inquiry, justly consider the years 1835 to 1870 the rennaisance of the clinical thermometer.

For one, the writer can well remember when a clinical thermometer was a novelty. We were taught to rely upon its indications almost implicitly. A temperature of 105°–106° meant grave and immediate danger. Higher than this, the inevitable approach of death. On the other hand, so low a temperature as 96° was thought incompatible with life—*i. e.*, death was already claiming the victim. An intermediate range, 100° to 103°, meant a safe and very easy course of disease, and happy was the practitioner who attended the fortunate patient.

For one, the writer had a rude and sudden awakening from this idea, soon after engaging in practice. A young and previously healthy woman was thought to have colic. A messenger came to my office for an anodyne. I was called two days later and found obstruction of the bowels. The patient was seriously ill, and all efforts were unavailing. But the temperature was only 101°, the pulse 120, and I was confident that a movement of the bowels would cure the patient promptly. She had tenderness, and some distension, over the entire abdomen, but I was surprised to find general peritonitis at the autopsy, on the fourth day after her illness began. A gangrenous vermiform appendix had caused the peritonitis. Morphia had obscured some of the symptoms. The temperature had not reached a higher point than 102°.

On another occasion I was called by a very excellent practitioner to see a case of septicæmia from placental remains following delivery at term. The temperature had reached 104° each afternoon for several days previous. A radical cleansing of the uterus caused a drop of the temperature to 96° the next morning. I was summoned in haste by the physician in person, who was greatly alarmed. I expected to find the patient in collapse, and on the way very anxiously reviewed in my mind the steps of the operation, fearing that I had punctured or ruptured the uterus. But upon my arrival the patient was found perfectly calm, far more so than her medical attendants, for she did not suspect their fears. Her pulse was perfectly normal, and there was absolutely no trouble in her convalescence. If her physician had not taken her temperature he would not have suspected any trouble whatever.

On another occasion, after an important laparotomy, one among my first cases, the nurse discovered a temperature of 102° an hour or two after operation, in a woman who had not previously had any rise in temperature. This patient had suffered for many years with chronic disease of tubes and ovaries. The operation was well done, a drainage tube inserted, and there was no reason to fear any peritonitis, had the thermometer not been used at all the day of operation. She made a perfectly satisfactory recovery and the temperature never again reached as much as 100°. The alarm was created by a temperature caused entirely by the nervous excitability of the patient.

These cases are cited merely to illustrate the fallacy of thermometrical indications alone, and unaided by other useful signs of disease.

In the consideration of pyrexia attending surgery, within the peritoneal cavity especially, we must remember with what an interesting membrane we have to deal. We well know the dread formerly experienced by surgeons who invaded its sacred precincts. We may now well consider it the surgeon's best ally and friend.[2]

Inflammation of this "lymph sac" gives us very numerous, very serious, very various symptoms, and no one, nor any group of them (according to Mr. Lawson Tait), can be depended upon as furnishing reliable indications or symptoms. There may be an almost normal pulse and temperature.

On the other hand, "a temperature of 106° and a pulse of 150 or more may not indicate peritonitis,"[3] even after a laparotomy, when we have reason to fear it.

Again, a severe peritonitis may be present with a temperature below normal, and even the pulse, (usually more to be relied upon than the temperature) may not be greatly accelerated.

Pyrexia alone cannot be considered an absolute indication of peritonitis, nor even sepsis after any surgical procedure. It is quite the custom for nurses, and indeed many physicians, to ply the thermometer during or immediately after a chill. Such information is absolutely unreliable and of no service whatever. A chill or rigor is an important manifestation of extending disease (if not merely due to nervous excitability) and an indication whose value and significance is not to be measured by the height of a column of mercury in a glass tube.

What importance can then be attached to pyrexia by the surgeon? If I have cast a doubt upon the usefulness of careful observations of the temperature of the body in disease, let me disclaim such intention, for it is my intention to urge a *better understanding of their value*.

But let us consider, other and equally, if not more, important tests of our patient's welfare, if recovering from any surgical operation, or even ill with any malady possibly requiring surgery for its relief.

To the obstetrician, pyrexia is full of meaning. If there be rigors, with pain in the region of the uterus and quick pulse and temperature anywhere over 100° or 101°, the patient is fortunate who obtains relief when her uterus is carefully cleansed of all septic matter. In these cases the temperature is far more reliable before the disease extends beyond the uterus than after. I know of no more valuable surgical operation than that of curetting and irrigation of a septic uterus. If the pulse and temperature both promptly respond to treatment, the

2. Little more than a century ago inflammation of that portion of the peritoneum over the intestine meant an enteritis; that over the stomach a gastritis; that over the uterus a metritis. Puerperal fever was thought to be an infection of the blood not secondary to any local inflammation.

3. Tait.

disease will in all probability be checked; *per contra*, there is grave danger ahead for the patient. Should the temperature in any case of puerperal or specific infection show an evening exacerbation for weeks, or perhaps months, we will almost surely find, on proper local examination, "cellulitis," according to somewhat ancient pathology, now known to be localized peritonitis from a permanent source of infection, generally introduced through the uterine mucosa into the fallopian tubes, distending them with pus or serum, and causing them, with the ovaries, to adhere to all adjacent surrounding structures. I do not wish to have it appear that all cases of pyosalpinx or pelvic abscess, necessarily cause a rise of temperature. We frequently meet with cases of pyosalpinx, and occasionally pelvic abscess, which require careful watching to find a rise of temperature, and it may be taken for granted that the pus is limited within either tube or thick sac, if there be no evening pyrexia.

We may confidently predict extending and increasing inflammation just so long as the pyrexia continues.

Observations made daily upon patients suffering with pelvic abscess often show a decided improvement, so far as pulse and temperature and even pain is concerned, after resting and using free purgation. This often occurs without any apparent change in the size or conformation of the tumor, although some, especially the acute cases, improve so greatly as to decline any further treatment. It is, without doubt, advisable to select a time for operation when all symptoms show improvement, as such cases, however great the complications encountered, have a decidedly better chance for recovery. The administration of quinine is always advisable in these surgical cases, when the temperature is above normal. There may be a lurking malaria which has influence upon the disease, and at any rate the patient's condition is improved by it. More than one case of unsuspected malaria has been found to have been the cause of the pyrexia in pelvic cases, when the pelvic disease was naturally enough thought the cause.

After laparotomy we may see, as in obstetrical cases, a rise of temperature quite unexpected and unexplainable. It is in these cases that quinine is valuable, as it often promptly restores the temperature to normal.

When we fully understand that peritonitis, having once become general, is as a rule fatal, whatever the treatment, we can easily see why prevention is better than reliance upon any ~~human~~ form of treatment. Dr. Battey has well said that when the patient is put to bed after operation, her fate is sealed. We hear much of the treatment of peritonitis by purgation, and other measures, but there is always doubt as to the extent of the inflammation in these cases. A pyrexia, with quick pulse and even increasing distension, does not necessarily indicate peritonitis, although we know these symptoms show a condition very favorable to

known

its development, and if they continue without abeyance, must almost certainly result in the dread disease.

The patient's pulse, her respiration, her countenance and voice, her ability to raise and move the abdominal walls in respiration, are all of great value in determining the presence or absence of inflammation. If the temperature is not higher than 102° or even 103°, P. M., on the third or fourth day after laparotomy, we may fully expect a recovery, *if the pulse is of good quality*, without reference to its frequency, provided the patient's bowels are open, and the stomach retains fluids. This remark, of course, applies only to completed operations, and does not include forlorn exploratory operations, or even hysterectomy. There may be some reason for a temperature of 102° or 103° on the third to the sixth day, which may be easily explained. Very often the abdominal wound is infected in operations for pelvic abscess or dermoid cysts. In these cases we may expect to have suppuration in the wound with stitch-hole abscesses.

The charts are selected to illustrate some of the claims made in this paper:

No. 1 is D. F.; age, 20; confined, February 29; septicæmia; attended by midwife. A month later admitted, temperature 102°–105° for nearly a month before consultant agreed that operation was necessary. During delivery she sustained a rupture of her uterus, which was fortunately partly closed by the omentum dipping down and fastening itself within the opening, yet permitting sepsis to enter along its border. When the omentum was removed the finger was easily passed into and some distance down the uterine canal. The greatest difficulty was encountered in the separation of intestinal adhesions and the closing of necrotic rents in the bowel.

No. 2 shows the temperature after operation in a case of pelvic abscess. The case had, previous to operation, temperature 105°; after waiting for the subsidence of this fever, operation done with a perfect result. The girl was demented for several days after the operation, but gave no trouble, merely having a religious ecstacy. Temperature in this case never much above normal.

No. 3.—Ruptured dermoid cyst of 12 lbs. weight. Twisted pedicle, general adhesions; albuminuria; sloughing of the wound; sub-normal temperature for nearly three weeks; quick pulse; recovery.

No. 4—Gonorrhœal salpingitis, involving ovaries and bowel. Temperature 103° before admission. Development of malaria after section.